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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,200	06/27/2001	Jonathan E. Michelson	68970	7077

26327 7590 03/14/2005

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EXAMINER	
LE, VIET Q	

ART UNIT	PAPER NUMBER
2667	

DATE MAILED: 03/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/894,200	MICHELSON ET AL.	
	Examiner	Art Unit	
	Viet Q. Le	2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 June 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *06/27/2001*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Fablo Massimo Chiussi et al. (U.S. 5,689,500), hereinafter referred to as Fablo.

Regarding claim 1, Fablo disclosed a packet switching system (See fig. 11) comprising: a plurality of first components (See fig. 11, blocks 1131, and ASX modules. The reference illustrated a three (3)-stage switch. The first stage switch is labeled as "ASX Input", the second stage switch is labeled as "AXB Crossbar" and the last stage is labeled as "ASX Output"), each of the plurality of first components including: a storage device for storing received information (See fig. 3, block 304 & 306; See also column 3, lines 21-23), and control logic for receiving information and for updating the storage device with indications of the received information (See fig. 3, block 301); a plurality of second components (See fig. 11, blocks 1132, AXB Crossbar modules); a plurality of paths between each of the plurality of first components and each of the plurality of second components (See fig. 11, lines 1134); wherein each of the first components is

configured to sequence through a portion of the storage device, and to send information stored at a current location within the portion of the storage device over the plurality of paths to each of the plurality of second components (See column 4, lines 53-56; Packets are stored in the memory before being forwarded to destination nodes. Information like the flow control information is stored in the header field of the packet as indicated in column 6, lines 22-23); and wherein each of the plurality of second components receives said information sent from each of the plurality of first components (See fig. 11, blocks 1132), and each of the plurality of second components is programmed to forward said received information received from a particular one of the plurality of first components (See column 4, lines 53-56).

Regarding claim 2, Fablo disclosed the packet switching system, wherein the information includes flow control information (Packets are stored in the memory before being forwarded to destination nodes. Information like the flow control information is stored in the header field of the packet as indicated in column 6, lines 22-23).

Regarding claim 3, Fablo disclosed the packet switching system, wherein each of the first components corresponds to a first stage switching element of a switching fabric (See fig. 11, blocks 1131; Packets are routed from the input nodes to the first switching stage (ASX Input), then to the second switching stage (AXB Crossbar) and then to the last stage (ASX Output). First components correspond to the first switching stage).

Regarding claim 4, Fablo disclosed the packet switching system, wherein the switching fabric includes a Benes topology (See fig. 11; This type of switching topology is a typical large, high-throughput switch, containing multiple stages of switching nodes (node-stages) interconnected by stages of links (link-stages) to provide multiple paths between input ports and output ports. Benes network is example of such network).

Regarding claim 5 & 19, Fablo disclosed a packet switching system comprising a plurality of switching elements in a packet switching system for collecting and distributing information, the method comprising: means for maintaining a data structure (See column 4, lines 53-63); means for receiving information (See column 4, lines 53-63); means for updating the data structure in response to said received information (See column 4, lines 53-63); and means for sequencing through the data structure, extracting a current value at a current position within the data structure, and sending the current value over a plurality of predetermined routes to a plurality of traffic sources (See column 4, lines 53-56; See column 3, lines 60-67 & column 4, lines 1-5; Back pressure is also used to inform the sources of congestion problems at the output ports by forwarding signaling information back to the source. Information like the flow control information is stored in the header field of the packet as indicated in column 6, lines 22-23).

Regarding claim 6, Fablo disclosed the method, wherein said information includes flow control information (Information like the flow control information is stored in the header field of the packet as indicated in column 6, lines 22-23).

Regarding claim 7, Fablo disclosed the method, wherein at least a portion of the predetermined routes for all of the plurality of switching elements are non-overlapping (See column 4, lines 53-67; Pre-determined routes are derived from the header information with complete information on route from the first node to the destination/node addresses stored in the incoming buffer/memory at the first stage. Pre-determined routes are non-overlapping).

Regarding claim 8, Fablo disclosed the method, wherein the packet switching system includes a Benes switching fabric (See fig. 11; This type of switching topology is a typical large, high-throughput switch, containing multiple stages of switching nodes (node-stages) interconnected by stages of links (link-stages) to provide multiple paths between input ports and output ports. Benes network is example of such network).

Regarding claim 9, Fablo disclosed the method, wherein each of the plurality of switching elements includes a first stage switching element (See fig. 11, blocks 1131; Packets are routed from the input nodes to the first switching stage (ASX Input), then to the second switching stage (AXB Crossbar) and then to the last stage (ASX Output). First components correspond to the first switching stage).

Regarding claim 10, Fablo disclosed the method, wherein each of the predetermined routes between each of the plurality of switching elements and each of a plurality of final stage switching elements is used only by one of the plurality of switching elements (See column 4, lines 53-67; Pre-determined routes are derived from the header information with complete information on route from

the first node to the destination/node addresses stored in the incoming buffer/memory at the first stage).

Regarding claim 11, Fablo disclosed the method, wherein said values are distributed to input interfaces or line cards of the packet switching system (See column 3, lines 60-67 & column 4, lines 1-5; Back pressure is used to inform the sources of congestion problems at the output ports).

Regarding claim 12, Fablo disclosed the method, wherein said information is received from one or more packet destination components of the packet switching system (See column 4, lines 6-10).

Regarding claim 13, Fablo disclosed the method, wherein sending the current value includes adding an address indication of the current position and the current value to one or more fields of one or more packets (See column 4, lines 25-52).

Regarding claim 14, Fablo disclosed the method, further comprising periodically sending one or more packets without said information (See column 4, lines 25-52; When not forwarding any flow control information residing in the headers of the packets, packets are still forwarded to the next nodes with none of these flow control information).

Regarding claim 15, Fablo disclosed the method, further reconfiguring the plurality of predetermined routes in response to detecting a failure condition (See column 4, lines 53-56; Information like the flow control information is stored in the header field of the packet as indicated in column 6, lines 22-23. The header information will tell the packets of the route and destination nodes where the

packets will be heading. By nature of a switch, when a link fails, it will be switched or routed to a redundant link).

Regarding claim 16, Fablo disclosed the method, further reconfiguring said predetermined routes upon receiving a command (See column 4, lines 53-56; Information like the flow control information is stored in the header field of the packet as indicated in column 6, lines 22-23. The header information will tell the packets the route and destination nodes where the packets will be heading. By nature of a switch, when a link fails, it will be switched or routed to a redundant link. By nature of a software-controlled switch, commands can be generated to do switching or reconfiguration the switch).

Regarding claim 17, Fablo disclosed the method, wherein the command includes at least one new predetermined route (See column 4, lines 53-56; Information like the flow control information is stored in the header field of the packet as indicated in column 6, lines 22-23. The header information will tell the packets the route and destination nodes where the packets will be heading. By nature of a switch, when a link fails, it will be switched or routed to a redundant link. By nature of a software-controlled switch, commands can be generated to do switching or reconfiguration the switch from a pre-determined link to another link).

Regarding claim 18, Fablo disclosed a computer-readable medium containing computer-executable instructions for performing the method of claim 5 (See fig. 11; By nature of a software controlled switch, the switch is a computer-readable medium containing computer-executable instructions).

Regarding claim 20, Fablo disclosed the packet switching system, wherein said information includes flow control information (Packets are stored in the memory before being forwarded to destination nodes. Information like the flow control information is stored in the header field of the packet as indicated in column 6, lines 22-23).

Regarding claim 21, Fablo disclosed the packet switching system, wherein said packet switching system includes a Benes switching fabric (See fig. 11; This type of switching topology is a typical large, high-throughput switch, containing multiple stages of switching nodes (node-stages) interconnected by stages of links (link-stages) to provide multiple paths between input ports and output ports. Benes network is example of such network).

Regarding claim 22, Fablo disclosed the packet switching system, wherein each of the plurality of components includes a first stage switching element (See fig. 11, blocks 1131; Packets are routed from the input nodes to the first switching stage (ASX Input), then to the second switching stage (AXB Crossbar) and then to the last stage (ASX Output). First components correspond to the first switching stage).

Regarding claim 23, Fablo disclosed the packet switching system, further comprising means for periodically sending one or more packets without the current value (See column 4, lines 25-52; When not forwarding any flow control information residing in the headers of the packets, packets are still forwarded to the next nodes with none of these flow control information).

Regarding claim 24 & 26, Fablo disclosed a packet switching system comprising: a plurality of first stage switching components (See fig. 11, blocks 1131); and a plurality of last stage switching components (See fig. 11, blocks 1133); wherein each of the plurality of first stage switching components includes means for maintaining a data structure (See column 4, lines 53-63); means for receiving flow control information (See column 4, lines 53-63); means for updating the data structure in response to said received flow control information (See column 4, lines 53-63); and means for repeatedly sequencing through the data structure, extracting a current value at a current position within the data structure, and sending the current value over a plurality of predetermined routes to the plurality of last stage switching components; and wherein each of the plurality of last stage switching components includes means for receiving flow control information from the plurality of first stage switching components; and means for forwarding said flow control information received from the plurality of first stage switching components to a plurality of attached traffic sources (See column 4, lines 53-56; See column 3, lines 60-67 & column 4, lines 1-5; Back pressure is also used to inform the sources of congestion problems at the output ports by forwarding signaling information back to the source. Information like the flow control information is stored in the header field of the packet as indicated in column 6, lines 22-23).

Regarding claim 25 & 27, Fablo disclosed the packet switching system, wherein the packet switching system includes a Benes switching fabric (See fig. 11; This type of switching topology is a typical large, high-throughput switch,

containing multiple stages of switching nodes (node-stages) interconnected by stages of links (link-stages) to provide multiple paths between input ports and output ports. Benes network is example of such network).

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Martin P.A. Ljungberg et al. (U.S. 5,493,566), Flow control system for packet switches.

b. Vinod Gerald John Peris et al. (U.S. 6,728,211), Method and apparatus for delaying packets being sent from a component of a packet switching system.

c. Zubin D. Dittia et al. (U.S. 6,654,342), Accumulating and distributing flow control information via update messages and piggybacked flow control information in other messages in a packet switching system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Viet Q. Le whose telephone number is 571-272-2246. The examiner can normally be reached on 8 AM -5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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